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pated that the experiments bearing upon these points would be detailed and the conclusions to be drawn from them pointed out. In this way it would have become much clearer how much or how little experimental work had done in elucidating the development of the frog, and the book would have been given a unity which it does not now possess. The descriptive portions and the account of experimental work might have been bound under separate covers, neither volume showing a decided lack of the matter treated in the other. It may be questioned if a volume on the general subject of 'Experimental Embryology,' from so competent a hand as that of Professor Morgan, with no attempt even nominally to limit the discussion to a particular egg, would not have met the demand more precisely than the present work. The descriptive chapters will hardly take the place of Marshall's work on the embryology of the frog, and this portion of the book seems in some respects not so well presented as that on the experimental results. In some chapters the arrangement is a confused one. Thus, after an extended discussion of the cleavage of the egg and especially the variations in that process, and after the egg has been brought to the blastula stage, we find again (p. 41) a paragraph adding some new facts as to the first and second cleavages. At times one misses a clear-cut statement of the question upon which a set of observations or experiments bear. For example, in the account of Roux's experiments with oil-drops, pp. 43-47, it is mentioned only incidentally that the question here is as to the part played by surface tension in cleavage, so that the point might easily be missed by one not acquainted with previous discussions on the subject. In the descriptive chapters typographical and other errors also are more frequent; a particularly confusing matter is the incorrect reference in the text to the lettering of the figures, in a number of cases. Thus occurs on p. 41 ('Fig. 12 G. H.'), p. 105 ('A'-B²' and 'Fig. 33 B'), p. 156 ('Fig. 47 B'). In several cases the discussion would be made much clearer if the successive cleavage planes could have been numbered in the figures.

The descriptive part, however, whatever be its merits or demerits, is not the distinctive

feature of Professor Morgan's book; it is for the account of experimental work that it will be read, and for this it will be found of the greatest value.

HERBERT S. JENNINGS.

MONTANA COLLEGE OF AGRICULTURE AND MECHANIC ARTS, BOZEMAN, MONTANA.

Geologic Atlas of the United States, Folio 36.
Pueblo, Colorado, 1897.

The folio consists of seven pages of text, signed by Grove Karl Gilbert; a topographic map; maps showing the areal geology, economic geology, structure sections, deformation and data pertaining to artesian water; a sheet of columnar sections, and a sheet showing typical fossils and special types of outcrop. The scale is 1:125,000, and the area described is comprised between parallels 38° and 38° 30' and meridians 104° 30' and 105°.

The quadrangle includes a portion of the Great Plains close to the base of the Rocky Mountains. The topography is partly of the foothill type and is in general sufficiently rugged to exhibit clearly the stratigraphy and structure. In the western part are portions of the great hogback formed by the upturned edge of the Dakota sandstone.

The formations range from Archean to Pleistocene. The Paleozoic rocks have a thickness of but two or three hundred feet and their exposures are unimportant. The Juratrias rocks, comprising bright-colored shales and sandstones, have an extreme thickness of 2,500 feet, but their surface extent is small. The Cretaceous rocks range from the Dakota formation to the Pierre and cover nine-tenths of the area. They consist chiefly of gray shale; in a total thickness of 3,800 feet there are only 75 feet of limestone and 300 to 500 feet of sandstone, the latter being at the base of the series. One hundred feet of alluvial sand and gravel are referred to the Neocene, and other alluvial deposits to the Pleistocene.

Unconformities appear at the base of the Paleozoic, Cretaceous, Neocene and Pleistocene formations, and the geologic history is correspondingly complex. The structure of the Paleozoic and Juratrias rocks was ascertained only in the limited area of their exposure. The

structure of the Cretaceous rocks was determined more completely, and, as it has important economic bearings in connection with artesian water, a special sheet is devoted to its presentation. In a plaster model the upper surface of the Dakota sandstone was restored so as to exhibit its flexures and faults, and a lithographic plate was prepared from a photograph of this model. The general trend of the flexures is NNW, and the faults have the same course.

The flex rocks have been subjected to erosion during a large part of Tertiary time, with the result that the relief expresses the principal facts of structure with great fidelity. Inclined outcrops of the resistant Dakota sandstone form monoclinical ridges from 600 to 1,200 feet in height. A limestone at the base of the Niobrara formation is expressed in a system of sloping plains, mesas and ridges, which the details of structure render somewhat complex. The outcrop of another limestone is marked through a wide range of territory by a characteristic terrace, and other terraces are determined by Neocene and Pleistocene alluvial formations.

Among the economic materials are sandstones available for structural purposes, limestones available for lime, and flux, gypsum and fire-clay. Artesian water, contained in the Dakota sandstone, underlies nine-tenths of the quadrangle, and the structural relations indicate that in about one-sixth of the quadrangle the head is sufficient to carry it to the surface. A special map indicates its distribution, showing separately the flowing and pumping areas and indicating by contours the estimated depth of the water below the surface of the ground.

The text is adjusted to the needs of lay readers; technical language is avoided, so far as may be, and where avoidance is impracticable the terms used are explained.

SOCIETIES AND ACADEMIES.

BIOLOGICAL SOCIETY OF WASHINGTON, 236TH MEETING, SATURDAY, JANUARY 29.

MR. WILLIAM PALMER read a paper on the Birds of the Pribilof Islands, Alaska, stating that 69 species were known from that locality. Of these, 18, mostly stragglers, are American,

28 are exclusively Pacific, 17 are circumpolar and but 6 Asiatic. None of the Asiatic species breed on the islands, and but one of the American species. Seventeen of the Pacific forms and four of the circumpolar, however, breed on the Pribilofs. With the exception of eleven land birds, four of which are common and breed, the entire avifauna is composed of water birds and waders. Thousands of birds pass southwards through the Aleutian Islands during the autumnal migration to their winter homes on the coast of Asia. Others journey direct to the Hawaiian and other islands of the Middle and South Pacific, thus making the longest trans-oceanic journeys known to be made by birds.

Dr. L. O. Howard presented, under the title 'The European hornet in America,' some brief notes about *Vespa crabro*. He exhibited specimens of the larva and pupa of this insect taken by Dr. E. G. Love from a nest found near Jamaica, Long Island. He also showed photographs of the nest, both in longitudinal and horizontal section. He showed that this insect has been present in this country in the vicinity of New York City certainly since 1848, but that during that time it has spread less than 150 miles from its point of introduction, the most distant point at which it has certainly been found being Anglesea, N. J. Reported occurrences in Maryland and North Carolina were considered doubtful by the speaker. He further called attention to the fact that, while in Europe the species usually inhabits outhouses, in this country its nests have almost invariably been found in hollow trees.

F. A. LUCAS,
Secretary.

THE ACADEMY OF SCIENCE OF ST. LOUIS.

AT the meeting of the Academy of Science of January 17, 1898, seventeen persons present, a paper by Charles Robertson, entitled 'New or Little Known North American Bees,' was read in abstract and referred to the Council for publication. Dr. A. C. Bernays addressed the Academy on biological facts as evidence of man's place in nature. He illustrated certain facts from the ontogeny of man by description and blackboard sketches, and tried to explain the anatomical peculiarities in the structure of